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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/812,177	03/29/2004	Keisuke Inoue	SCEI 3.0-170	3379
530 7590 09/11/2007 LERNER, DAVID, LITTENBERG, KRUMHOLZ & MENTLIK 600 SOUTH AVENUE WEST WESTFIELD, NJ 07090			EXAMINER ALHIJA, SAIF A	
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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/812,177	Applicant(s) INOUE, KEISUKE	
	Examiner Saif A. Alhija	Art Unit 2128	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 29 March 2004.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-89 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-89 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 29 March 2004 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|--|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input checked="" type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. <u>20070418</u> |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

1. Claims 1-11, 13-24, 26-31, 33-60, and 63-89 are currently pending.
Claims 1-12, 24-34, and 53-63 were previously elected for examination.
Claims 12, 25, 32, and 61-62 have been cancelled.

Response to Arguments

2. Applicant's arguments filed 25 June 2007 have been fully considered but they are not persuasive.
 - i) Applicant argues the undue multiplicity rejection of claims 1-89. Applicants arguments and the Examiners response are provided:

- a) Applicant argues that the Examiner has omitted a critical section of the MPEP with regards to undue multiplicity rejections. The Examiner notes that this is an abstract argument. The rejection should be applied judiciously and should be rare. The rejection was carefully considered and is appropriate for the instant application. All of Applicant's objections provided during the interview were addressed. Further, Applicants have not addressed or explained why this finding was in error. A prime facie case was made and Applicants have not addressed the merits of the rejection.
- b) Applicant argues that the Applicant has paid extra claim fees for the 89 total claims presented. The Examiner notes that this is not determinative of the issue.
- c) Applicant argues In re Flint stating that the rejection is contrary to case law. The Examiner notes that the rejection was made in view of relevant court decisions. With respect to In re Flint, the court's main point (addressing Appellants having only four independent claims) was, *"We fail to see the fourfold repetition of the same substance referred to by the board and solicitor. The claims differ from one another and we have had no difficulty in understanding the scope of protection. Nor is it clear, on this record, that the examiner or board was confused by the presentation of the claims in the case or that the public will be."* However in this case the Examiner has clearly explained that the 89 claims

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and 11 independent claims contain limitations from multiple embodiments that are assorted into multiple different independent claims in an unclear manner and result in a "maze of confusion." Regardless, the Examiner notes that Applicants selectively refer to In re Flint but are silent on In re Chandler. Appellants' contention here is very similar to that made by the Appellant in the Chandler case in which the court held that the alleged complexity of the specific apparatus afforded no basis for an excessive number of claims. The court stated, 117 USPQ at 363: As was pointed out in In re Barnett, 33 CCPA 1119, 155 F.2d 540, 69 USPQ 609, it is proper to allow applicants a reasonable latitude in setting forth their inventive concepts in different phraseology, but it is the purpose of claims to point out and define what an applicant regards as his invention, *and that purpose is not served if, as the result of frequent repetitions, they present to the mind a blur rather than a definition.*

- d) The Examiner notes that the reasoning behind the rejection provided during the phone call, following Ex parte Joyce and Van Langenhoven, 169 USPQ 373 (Bd. Pat. App. & Int. 1969), was sufficient. The Examiner further notes that Applicants did not disagree with the reasoning provided or the rejection itself when they elected claims 1-12, 24-34, and 53-63 to be examined.

- e) Following the Examiners response above the undue multiplicity rejection is

maintained.

- ii) The 112 2nd rejection of claim 2 is withdrawn.
- iii) Applicant argues the 101 rejections of the claims by merely restating the claim language and declaring that the claims produce a useful, concrete, and tangible result. The merits of the rejection have not been addressed and the 101 rejections are maintained. Applicants further argue the 101 rejections of the claims by stating that the claims do not positively recite a compiler. However as per the specification of the instant application the compiler is associated with the processing devices and components, see paragraph 76

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of the instant application, and therefore since the claims recite these elements and a compiler is associated with these elements the 101 rejections are maintained.

- iv) Applicant argues that Chauvel does not teach a “cooling attribute.” Following the broadest reasonable interpretation of a cooling attribute the Examiner contends that a cooling attribute is discussed in the reference in a plurality of ways. First, the reference discusses “temperature associated information”, see paragraph 11 of Chauvel, as well as temperature thresholds as per paragraph 12 of Chauvel, as well as temperature effects, see paragraph 52 of Chauvel. Following the inherent nature of heat as it relates to IC’s following a drop in power provided to an IC the temperature will drop. Second, the references discussion of the dissipation of heat reads on a cooling attribute, see at least paragraph 8 of Chauvel. Further, cooling mechanisms and attributes are inherent in the desktop/portable computers discussed in the reference in the form of fans and heat sinks as well as in the inherent nature of cooling in that following a lack of power supplied to an IC the IC will begin to cool.
- v) Applicant argues that Chauvel does not teach a dual queue configuration. See paragraph 49 of Chauvel, which discusses task rescheduling for multiple processors, MPU/DSP, based on priority. A queue is merely a schedule of tasks and the discussion of multiple processors with multiple task schedules reads on the claims as presented.
- vi) The Examiner has cited particular columns and line numbers in the references applied to the claims for the convenience of the applicant. Although the specified citations are representative of the teachings of the art and are applied to specific limitations within the individual claim, other passages and figures may apply as well. It is respectfully requested from the applicant in preparing responses, to fully consider the references in their entirety as potentially teaching all or part of the claimed invention, as well as the context of the passage as taught by the prior art or disclosed by the Examiner.
- vii) The Examiner respectfully requests, in the event the Applicants choose to amend or add new claims, that such claims and their limitations be directly mapped to the specification,

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which provides support for the subject matter. This will assist in expediting compact prosecution. Further the Examiner respectfully encourages Applicants to avoid potential Double Patenting issues following any amendment as relating to co-pending application 10/812155.

- viii) Further, the Examiner respectfully encourages Applicants to direct the specificity of their response with regards to this office action to the broadest reasonable interpretation of the claims as presented. This will avoid issues that would delay prosecution such as limitations not explicitly presented in the claims, intended use statements that carry no patentable weight, mere allegations of patentability, and novelty that is not clearly expressed.

Claim Rejections - 35 USC § 101

35 U.S.C. 101 reads as follows:

Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

MPEP 2106 recites:

The claimed invention as a whole must accomplish a practical application. That is, it must produce a "useful, concrete and tangible result" State Street 149 F.3d at 1373, 47 USPQ2d at 1601-02. A process that consists solely of the manipulation of an abstract idea is not concrete or tangibles. See *In re Warmerdam*, 33 F.3d 1354, 1360, 31 USPQ2d 1754, 1759 (Fed.Cir. 1994). See also *Schrader*, 22 F.3d at 295, 30 USPQ2d at 1459.

3. Claims 1-11, 24, 26-31, 33-34, 53-60, and 63 are rejected under 35 U.S.C. 101 because the claimed invention is directed to non-statutory subject matter.

i) Claim 1 recites providing, associating, and scheduling operations. Therefore the claim does not produce a useful, concrete, and tangible result. The resultant of the claims is neither stored, nor provided to a user, etc., for example, and therefore does not contain a concrete and tangible result.

ii) Claim 24 recites a computing device with a plurality of associated operations. The association of.

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operations appears to be mere data manipulation and therefore the claims do not produce a useful, concrete, and tangible result.

iii) With respect to claims 1-12, 24-34, and 53-63, paragraph 74 of the instant application recites, "The compiler may be implemented in software, firmware, hardware or a combination of the above." Therefore the claimed limitations may be entirely software and are therefore non-statutory since "software per se" does not fall under an approved statutory category.

Appropriate correction is required.

All claims dependent upon a rejected base claim are rejected by virtue of their dependency.

Claim Rejections - 35 USC § 112

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

4. **Claims 1-11, 13-24, 26-31, 33-60, and 63-89** are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

i) Claims 1-11, 13-24, 26-31, 33-60, and 63-89 are rejected by virtue of undue multiplicity. Section 2173.05(n) of the MPEP states "*37 CFR 1.75. Claim(s). (a) The specification must conclude with a claim particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention or discovery. (b) More than one claim may be presented provided they differ substantially from each other and are not unduly multiplied. Where, in view of the nature and scope of applicant's invention, applicant presents an unreasonable number of claims which are repetitious and multiplied, the net result of which is to confuse rather than to clarify, a rejection on undue multiplicity based on 35 U.S.C. 112, second paragraph, may be appropriate. As noted by the court in In re Chandler, 319 F.2d 211, 225, 138 USPQ 138, 148 (CCPA 1963), "applicants should be allowed reasonable latitude in stating their claims in regard to number and phraseology employed. The right of applicants to freedom of choice in selecting phraseology which truly points out and defines their inventions should not be abridged. Such latitude, however, should not be extended to sanction that degree of repetition and multiplicity which beclouds definition in a maze of confusion. The rule of reason should be practiced and applied on*

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the basis of the relevant facts and circumstances in each individual case." See also In re Flint, 411 F.2d 1353, 1357, 162 USPQ 228, 231 (CCPA 1969)."

The now 84 claims and 11 independent claims contain limitations from multiple embodiments that are assorted into multiple different independent claims in an unclear manner and result in a "maze of confusion." The Examiner contacted Applicants representative, Andrew Zidel, Reg No. 45,256, to allow Applicants the opportunity to provide a preliminary amendment to resolve the undue multiplicity. Applicants representative elected claims 1-12, 24-34, and 53-63 to be examined. See Interview Summary attached to the previous office action.

All claims dependent upon a rejected base claim are rejected by virtue of their dependency.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

5. Claims 1-11, 24, 26-31, 33-34, 53-60, and 63 are rejected under 35 U.S.C. 102(b) as being clearly anticipated by Chauvel et al. "Temperature Field Controlled Scheduling for Processing Systems", U.S. Patent Application No. 2002/0065049.

Regarding Claim 1:

The reference discloses A method of scheduling operations to be performed by a component having a thermal threshold comprising:

providing a plurality of operations to be performed by the component; (Abstract. Figure 11. Paragraph 52)

associating the operations with a thermal attribute, the thermal attribute representing a value related to a heat amount expected to be generated or incurred by the component during performance of the operations;

(Abstract. Figure 11. Paragraph 52)

determining a cooling attribute; (Paragraph 8)

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and scheduling the operations in an order of performance based on the thermal attribute and the cooling attribute so that the thermal threshold is not exceeded. (**Abstract. Figure 11. Paragraph 52**)

generating the order of performance for use in execution of the operations. (**Paragraph 49**)

Regarding Claim 2:

The reference discloses The method of claim 1, further comprising measuring the thermal attribute with a temperature sensing means. (**Paragraph 53, Temperature Measurement**)

Regarding Claim 3:

The reference discloses The method of claim 1, further comprising estimating the thermal attribute based upon power consumption of the component. (**Paragraph 3**)

Regarding Claim 4:

The reference discloses The method of claim 3, wherein estimating the thermal attribute further includes performing a circuit simulation of the component. (**Paragraph 35, “experimentally or by computer aided software design.”**)

Regarding Claim 5:

The reference discloses The method of claim 3, wherein estimating the thermal attribute further includes determining a power density of the component. (**Paragraph 29, “power management tasks”**)

Regarding Claim 6:

The reference discloses The method of claim 1, further comprising the component executing the operations in the order of performance. (**Paragraph 32**)

Regarding Claim 7:

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The reference discloses The method of claim 6, wherein the component includes a plurality of processing devices and the thermal attribute is an aggregate thermal attribute of selected ones of the processing devices that execute the operations. (Claim 1)

Regarding Claim 8:

The reference discloses The method of claim 1, wherein the component includes a plurality of processing devices, each of the processing devices has an individual thermal threshold, and the thermal attribute includes a plurality of individual thermal attributes, each individual thermal attribute being associated with one of the processing devices. (Claim 1)

Regarding Claim 9:

The reference discloses The method of claim 8, further comprising:

- selecting at least some of the processing devices to execute the operations; (Figure 3a-3b. Paragraph 34-35)
- monitoring the selected processing devices; (Figure 3a-3b. Paragraph 34-35)
- and routing the operations among the selected processing devices so that the individual thermal thresholds are not exceeded. (Figure 3a-3b. Paragraph 34-35)

Regarding Claim 10:

The reference discloses The method of claim 1, wherein the component includes a plurality of processing devices and the thermal attribute is allocated among the plurality of processing devices. (Figure 3a-3b. Paragraph 34-35)

Regarding Claim 11:

The reference discloses The method of claim 1, further comprising determining the thermal attribute by:

- (i) determining power consumption of the component; (Figure 3a-3b. Paragraph 34-35)
- (ii) determining a footprint of the component; (Figure 3a-3b. Paragraph 34-35)

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(iii) dividing the power consumption of the component by the footprint of the component to obtain per-area power consumption; **(Paragraph 12, 49)**

and (iv) multiplying the per-area power consumption by a thermal estimation constant. **(Paragraph 12, 49)**

Regarding Claim 24:

The reference discloses A processing system comprising:

a computing device including a component; **(Abstract. Figure 11. Paragraph 52)**

a plurality of operations to be performed by the component, at least some of the operations including a priority; **(Abstract. Figure 11. Paragraph 52)**

and at least one thermal attribute associated with the component and a selected one of the operations, the thermal attribute being indicative of a change in temperature of the component after performance of the selected operation. **(Abstract. Figure 11. Paragraph 52)**

a plurality of priority queues, each priority queue including a first queue and a second queue, the first queue for storing a first set of the operations and the second queue for storing a second set of the operations; **(Paragraph 49)** and

a scheduler operable to assign at least one of the operations to the component depending on the thermal attribute. **(Paragraph 49)**

Regarding Claim 26:

The reference discloses The processing system of claim 24, wherein the scheduler is operable to retrieve a chosen one of the operations from a storage location depending upon the thermal attribute. **(Abstract. Figure 11. Paragraph 52)**

Regarding Claim 27:

The reference discloses The processing system of claim 24, wherein the component includes a plurality of sub-components, the scheduler is a simple scheduler, and the thermal attribute is a total thermal attribute associated with the component and not associated with the plurality of sub-components. **(Paragraph 9, 51)**

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Regarding Claim 28:

The reference discloses The processing system of claim 24, wherein the component includes a plurality of sub-components, the scheduler is an advanced scheduler, and the thermal attribute is further associated with at least some of the sub-components. (Paragraph 12, 49)

Regarding Claim 29:

The reference discloses The processing system of claim 24, wherein the component is a processing device and the scheduler is integrated with the processing device. (Abstract. Figure 11. Paragraph 52)

Regarding Claim 30:

The reference discloses The processing system of claim 24, wherein the selected operation comprises a task, and the thermal attribute is a task thermal attribute. (Abstract. Figure 11. Paragraph 52)

Regarding Claim 31:

The reference discloses The processing system of claim 24, wherein the task thermal attribute is based on at least one of an operating frequency of the component, a thermal attribute of the component, and a cooling attribute. (Paragraph 8, 39)

Regarding Claim 33:

The reference discloses The processing system of claim 24, further comprising a scheduler operable to assign at least some of the operations to either the first or the second queue in a selected one of the priority queues based on the priorities of the operations and on the thermal attribute. (Paragraph 30)

Regarding Claim 34:

The reference discloses The processing system of claim 33, wherein the scheduler is further operable to retrieve a chosen one of the operations from the first queue or the second queue of the selected priority queue

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depending upon the thermal attribute and the priority of the chosen operation. (Paragraph 30)

Regarding Claim 53:

The reference discloses A processing apparatus for processing operations associated with thermal attributes, comprising:

a memory for storing a first operation and a second operation, the first operation having a thermal attribute exceeding an operating threshold, and the second operation having a thermal attribute not exceeding the operating threshold; (Abstract. Figure 11. Paragraph 52)

and a plurality of processing devices for executing the first and second operations, at least a selected one of the processing devices comprising a sub-processing unit, and at least some of the processing devices having a thermal threshold and access to the memory; (Abstract. Figure 11. Paragraph 52)

wherein, if the thermal threshold of the selected processing device is not exceeded, the selected processing device is operable to obtain the first operation from the memory for processing and to process the first operation, (Abstract. Figure 11. Paragraph 52)

and if the thermal threshold of the selected processing device is exceeded, the selected processing device is operable to obtain the second operation from the memory for processing and to process the second operation, and (Abstract. Figure 11. Paragraph 52)

wherein the memory comprises a local store in the sub-processing unit, and the local store includes a first queue for managing the first operation and a second queue for managing the second operation. (Paragraph 49)

Regarding Claim 54:

The reference discloses The processing apparatus of claim 53, wherein at least some of the processing devices are processing elements. (Figure 3a-3b. Paragraph 34-35)

Regarding Claim 55:

The reference discloses The processing apparatus of claim 54, wherein at least some of the processing elements further comprise at least one sub-processing unit. (Figure 3a-3b. Paragraph 34-35)

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Regarding Claim 56:

The reference discloses The processing apparatus of claim 55, wherein each sub-processing unit includes a floating point unit, an integer unit and a register associated with the floating point unit and the integer unit. (Figure 3a-3b. Paragraph 34-35)

Regarding Claim 57:

The reference discloses The processing apparatus of claim 56, wherein each sub-processing unit further includes a local store. (Figure 3a-3b. Paragraph 34-35)

Regarding Claim 58:

The reference discloses The processing apparatus of claim 54, wherein at least some of the processing elements further comprise a processing unit and a plurality of sub-processing units associated with the processing unit. (Figure 3a-3b. Paragraph 34-35)

Regarding Claim 59:

The reference discloses The processing apparatus of claim 58, wherein the sub-processing units each further include a local store. (Figure 3a-3b. Paragraph 34-35)

Regarding Claim 60:

The reference discloses The processing apparatus of claim 53, wherein a first one of the processing devices is operable to exchange operations with a second one of the processing devices depending upon the thermal threshold of the first processing device. (Figure 3a-3b. Paragraph 34-35)

Regarding Claim 63:

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The reference discloses The processing device of claim 53, wherein the first and second operations are maintained in the memory in a timesharing arrangement. (Paragraph 30)

Conclusion

6. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).


A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

7. All Claims are rejected.

8. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Saif A. Alhija whose telephone number is (571) 272-8635. The examiner can normally be reached on M-F, 11:00-7:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Kamini Shah can be reached on (571) 272-22792279. The fax phone number for the organization where this application or proceeding is assigned is (571) 273-8300. *Informal or draft communication, please label PROPOSED or DRAFT*, can be additionally sent to the Examiners fax phone number, (571) 273-8635.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).


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